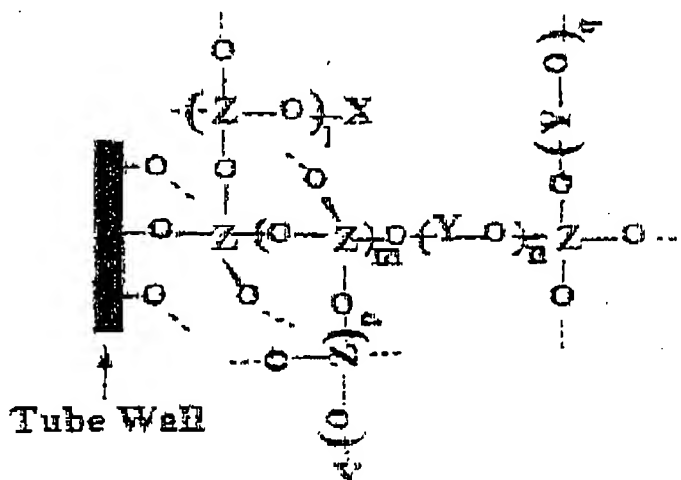


Listing of Claims:

1. (Currently Amended) A capillary column comprising:
a ~~silanol group containing~~ tube structure containing at least one sol-gel-active functional group on the inner surface that has been subjected to a hydrothermal treatment; and
a deactivated, surface-bonded sol-gel coating further comprising water and a non-crosslinked organic ligand on a portion of the tube structure to form a stationary phase coating on that portion of the tube structure, said deactivated stationary-phase sol-gel coating enabling separation of analytes while minimizing adsorption of analytes on the sol-gel coated tube structure.
2. (Original) A capillary column as set forth in claim 1, wherein said deactivated surface bonded sol-gel-coating on the portion of the tube structure has the formula:



wherein,

X= Residual of a deactivation agent

Y= Sol-gel reaction residual of a Sol-gel-active organic molecule;

Z= Sol-gel precursor-forming element;

l= an integer ≥ 0 ;

m= an integer ≥ 0 ;

n= an integer ≥ 0 ;

p= an integer ≥ 0 ;

q= an integer ≥ 0 ; and

l, m, n, p and q are not simultaneously zero.

Dotted lines indicate the continuation of the chemical structure with X, Y, Z, or Hydrogen (H) in space.

3. (Previously presented) A capillary column as in claim 2 wherein the residual of the deactivation reagent is selected from the group consisting of polymethylhydrosiloxane and hexamethyldisilazane.
4. (Previously presented) A capillary column as in claim 2 wherein said sol-gel reaction residue is selected from the group consisting of molecules having hydroxysilane functional groups, molecules having alkoxysilane functional groups, molecules having at least one hydroxysilane group and at least one alkoxysilane group; polydimethylsiloxane (PDMS), polymethylphenylsiloxane (PMPS), polydimethyldiphenylsiloxane (PDMDPS), polyethylene glycol (PEG), polyalkylene glycol; and alkyl moieties.
5. (Currently Amended) A capillary column as in claim 2 wherein said sol-gel precursor forming element is selected from the group consisting Si, Al, Ti, and Zr, Ge, W, and V;
6. (Currently amended) A method of preparing a capillary column comprising the steps of;
 - providing a tube structure having sol-gel-active functional silanol groups;
 - ~~hydrothermally treating the tube structure;~~
 - providing a sol-gel solution comprising;
 - a sol-gel precursor;
 - a non-crosslinked organic ligand material with at least one sol-gel active functional group;

a sol-gel catalyst;
a deactivation reagent; and
a solvent system including water;

reacting at least a portion of the tube structure with the sol-gel solution under controlled conditions to produce a surface-bonded sol-gel coating on the portion of the tube structure;

expelling the sol-gel solution from the portion of the tube structure; and

heating the coated portion of the tube structure under controlled conditions to cause the deactivation reagent to react with the surface-bonded sol-gel coating to deactivate and to condition the sol-gel coated portion of the tube structure.

7. (Canceled)

8. (Original) A method as set forth in claim 6, wherein the step of providing the tube structure comprises providing a tube structure with an inner wall, reacting the sol-gel solution with the inner wall of the tube structure for a period of less than 1 hour to form a surface-bonded sol-gel coating on the inner wall of the tube structure, and then applying gas pressure to the sol-gel solution in the tube structure to expel the sol-gel solution from the tube structure.

9. (Previously presented) A method as set forth in claim 8, wherein the sol-gel precursor comprises an alkoxy compound, the organic material comprises monomeric or polymeric material with at least one sol-gel active functional group, the sol-gel catalyst is selected from the group consisting of an acid, a base and fluoride compound, and the deactivation reagent comprises a material reactive to hydroxyl groups bonded to the sol-gel precursor forming element or to the tube wall surface.

10. (Currently amended) A method of preparing a capillary column that includes the steps of:

providing a capillary column comprising at least one sol-gel-active functional
silanol group-containing tube structure ~~that has been subjected to a~~
~~hydrothermal treatment~~; and

simultaneously creating, coating, immobilizing and deactivating a stationary phase comprising water and a non-crosslinked organic ligand on the tube structure.

11. (Currently amended) A method as set forth in claim 10; wherein the immobilization of the stationary phase comprises forming a chemical bonds between the stationary phase and the sol-gel-active functional silanol group on the capillary wall.
12. (Previously presented) The capillary column of claim 4, wherein the alkyl moiety comprises octadecyl moiety.
13. (Previously presented) The capillary column of claim 4 wherein the alkyl moiety comprises an octyl moiety.
14. (Previously presented) The capillary column of claim 1, wherein the stationary phase coating comprises a sol-gel polymer layer having organic and inorganic molecules.
15. (~~Previously presented~~Currently amended) The capillary of claim 1, wherein the ~~silanol groups are~~ sol-gel-active functional group is derivatized.
16. (Previously presented) The method of claim 10, wherein the step of creating a stationary phase comprises chemically reacting sol-gel-active components of a solution.
17. (Previously presented) The method of claim 10, wherein the tube structure is contacted with the stationary phase, and the stationary phase comprises an organic and inorganic interfacial polymer layer.
18. (Previously presented) The method of claim 10, wherein the stationary phase comprises a sol-gel polymer layer having organic and inorganic molecules.
19. (Previously presented) The method of claim 10, wherein the step of deactivating the stationary phase comprises reacting the silanol group with sol-gel active components of a sol solution at substantially the same time as creating the stationary phase coating.
20. (Previously presented) The method of claim 10, wherein deactivating the stationary phase comprises reacting the silanol groups while the tube structure is subjected to heat treatment.